Management

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Conceptual Design Phase Goals

CONCEPTUAL DESIGN REPORT

- Project Objectives
- Functional Requirements
- Technical Specifications
- Conceptual Design
- Cost Estimates
  - Preliminary Design Phase Cost
  - Total Estimated Cost and Total Project Cost
- Fully Integrated Project Schedule
  - Space, Ground and Operational Segments
- Funding Requirements and Timeline
- Risk Assessments
- Acquisition Plan

Concept Development

SYSTEMS ENGINEERING

- **Requirements Development**
  - Fully Define Science Requirements
  - Derive Requirements for Space Segment
  - Derive Requirements for Ground Segment
  - Derive Requirements for Operations

- **Space Segment Concept**
  - Perform Mission Analysis of Available Orbits and Communication Concepts
  - Derive Requirements for Launch Vehicle
  - Define System Requirements and Concept
  - Develop ACS Model of Spacecraft to Achieve Stable Pointing Requirements
  - Determine Role of OTA in Pointing Spacecraft
  - Develop Structural Requirements on Spacecraft
  - Study On-Board Image Compression .v. High Bandwidth Downlink
  - Develop Instrument Concepts

Concept Development

SYSTEMS ENGINEERING

- Ground Segment Concept
  - Command and Control
    - Determine Station Requirements
    - Evaluate Worldwide Ground Stations Applicability to SNAP
    - Develop Data Communication Strategies for L&EO and Mission Phases
    - Develop Mission Operations Concept
  - Computation
    - Determine Data Acquisition, Storage and Retrieval Requirements
    - Evaluate SN Discovery Technology
    - Evaluate Observation Scheduler Technology
- Operations Concept
  - Develop L&EO, Normal and Shadow Phase Requirements
  - Determine Observation Plan
  - Develop In-Flight Focusing, Calibration, Annealing Requirements

Research and Development Goals

SPACE SEGMENT - INSTRUMENT CONCEPT DEVELOPMENT

- Achieve Technology Readiness Level 6
  - Demonstrations of Technology in Relevant Environments
  - Lowers Risk to DOE in Project Execution Phase
- CCDs
  - Demonstrate Radiation Tolerance (Total Dose)
  - Demonstrate Low Noise and High Quantum Efficiency
  - Demonstrate CCD Fabrication and Test Ability
  - Decide Whether To Build Using LBNL or Outside Company
- GigaCam
  - Demonstrate Thermo-Mechanical Packaging Concept
  - Demonstrate Low Noise Electrical Performance
- Spectrograph
  - Demonstrate Image Slicer Performance

Research and Development Goals

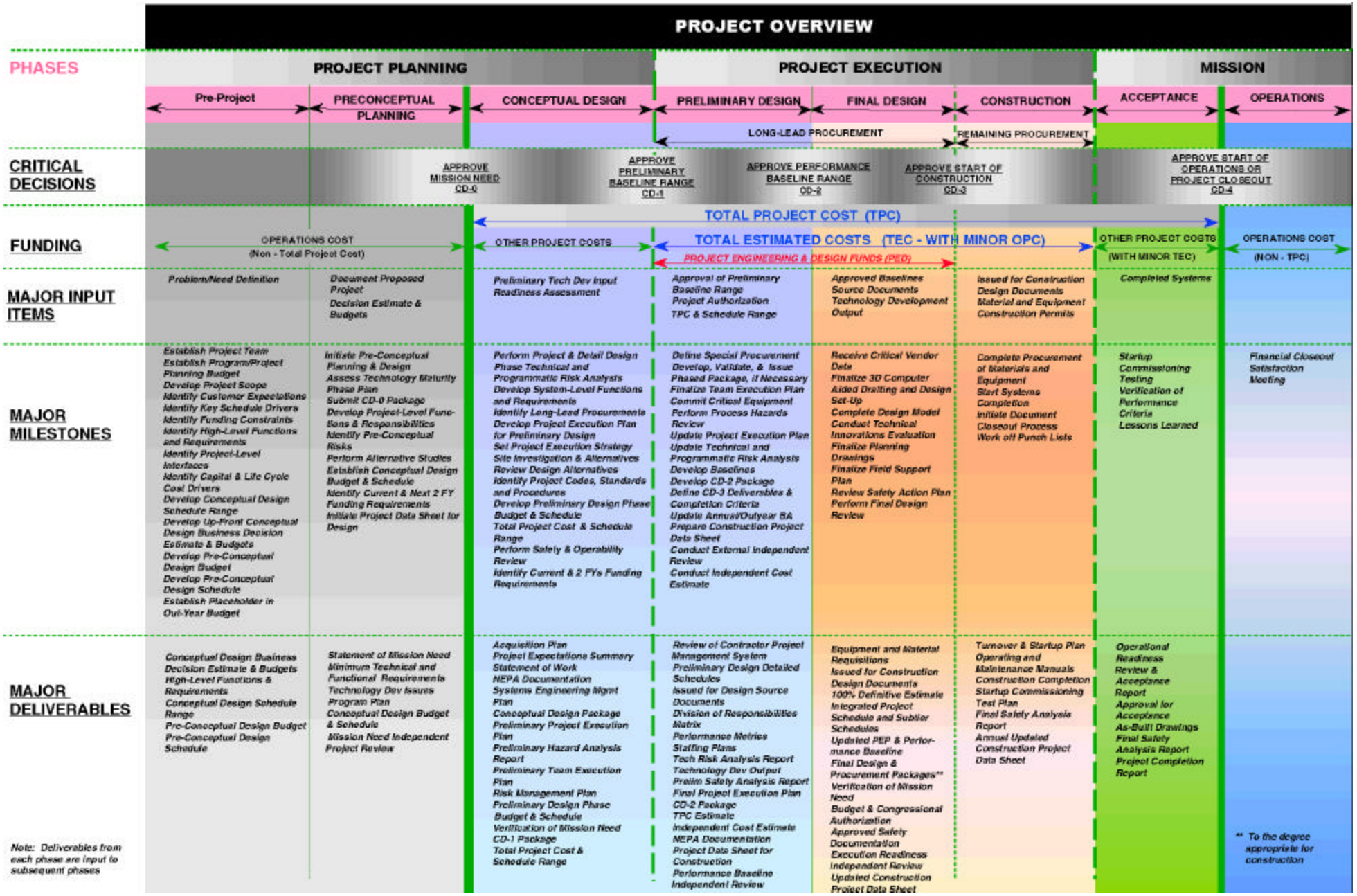
SPACE SEGMENT - INSTRUMENT CONCEPT DEVELOPMENT

- **NIR**
  - **HgCdTe Detector Developments and Applicability to SNAP**
  - **HgCdTe Characterization for SNAP Application**
  - **Determine Best Option of Three NIR Camera Options**
- **OTA**
  - **Select Optical Design**
  - **Specify Mirrors**
  - **Develop Filter Wheel Concept**
  - **Determine Pointing Budget and Rigidity Requirements**
  - **Determine Thermal Design and Budget**
  - **Evaluate Stray Light Issues**
  - **Determine Integration and Test Concept**

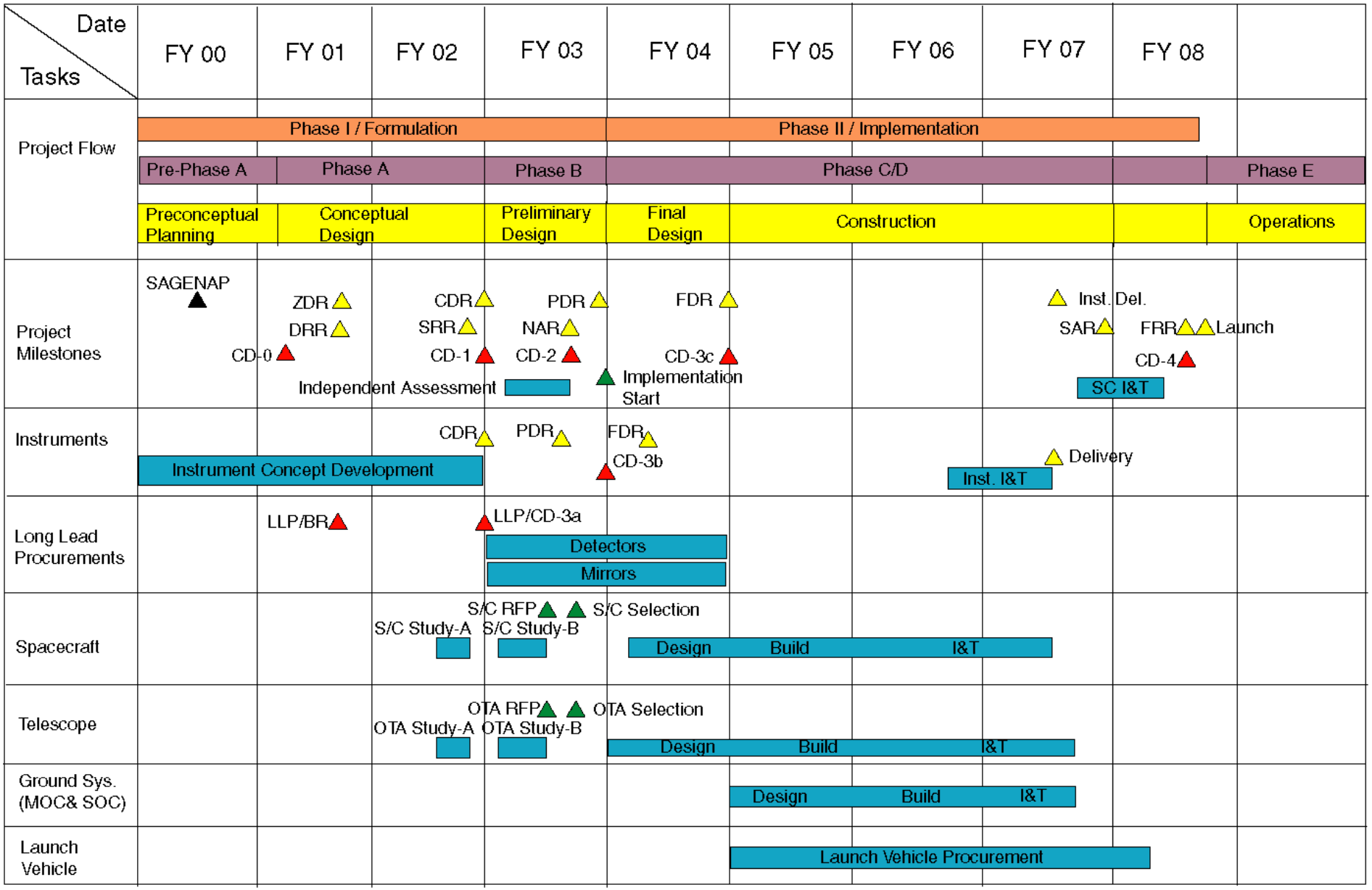
Major Deliverables

Item	Completion Date
• Zeroth-Order Design Report	2-Jul-2001
• Draft Requirements Review	2-Jul-2001
• Long Lead Procurement/ Budget Request	2-Jul-2001
• Systems Engineering Management Plan	1-Oct-2001
• Performance Assurance Implementation Plan (Draft)	1-Oct-2001
• Risk Management Plan	1-Oct-2001
• OTA & S/C Study RFPs	1-Jan-2002
• OTA & S/C Study Contract	1-Apr-2002
• Preliminary Project Execution Plan	1-Jul-2002
• Preliminary Hazards Analysis	1-Jul-2002
• Systems Requirements Review	1-Sep-2002
• Conceptual Design Report/Review	15-Sep-2002

Project Overview



Top Level Schedule



CDR - Conceptual Design Report
FDR - Final/Critical Design Review
FRR - Flight Readiness Review

DRR - Draft Requirements Review
NAR - Non-Advocate Review
PDR - Preliminary Design Review

SAR - System Acceptance Review
SRR - Systems Requirement Review
ZDR - Zeroth Order Design Report

LLP/BR - Long Lead Procurement Budget Req.

Issues / Concerns

- **ORGANIZATION**
  - **Need to Instruct NASA Groups in DOE Standard Practices**
  - **Need to Instruct DOE Groups in Aerospace Standard Practices**
  - **Need to Meet ITAR Regulations for International Partners**
  - **Need to Staff Up Key Positions**

- **SCHEDULE**
  - **Disparate Development Schedules**
  - **GigaCam - Significant R&D, Typical Fabrication Schedule**
  - **OTA - Low R&D, Extremely Long Fabrication Schedule**
  - **Spacecraft- Low R&D, Typical Fabrication Schedule**

- **MISSION COST ESTIMATE**

Miscellaneous